

REMARKS

The Office Action mailed on June 15, 2007, has been reviewed and the comments of the Patent and Trademark Office have been considered. Prior to this paper, claims 1-22 were pending. By this paper, Applicant cancels claims 18, 21 and 22, and add claims 23 and 24. Therefore, claims 1-17, 19-20 and 23-24 are now pending.

Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Interview of September 19, 2007

Examiner Chuo is thanked for extending the courtesy of an interview to Applicant's representatives on September 19, 2007, where the prior art was discussed in view of the features of the present invention.

In view of the Personal Interview held on September 19, 2007, Applicants submit that the Interview Summary (a copy of which is attached in Appendix A) provides a complete and proper recordation of the substance of the interview, per MPEP §713.04.

Claim Rejections Under 35 U.S.C. §103(a)

In the Office Action, claims 1, 7 and 16-22 are rejected under 35 U.S.C. §103(a) as being unpatentable over Saito (JP 2000-164233) in view of Salvador (U.S. Patent No. 6432568), with claim 2 being rejected in view of this combination when combined with Koizumi (U.S. Patent No. 4,818,845). Claims 3-6 are rejected in view of Saito when combined with Salvador and Gerstmann (U.S. Patent No. 5,772,113). Claims 8 and 9 are rejected in view of Saito when combined with Salvador and Breault (U.S. Patent No. 6,699,612). Claim 10 is rejected in view of Saito, Salvador and Breault when combined with Yamada (U.S. Patent No. 5,482,790). Claim 11 is rejected in view of Saito in view of Salvador and Breault and Roberts (U.S. Patent Publication No. 2001/0055707). Claim 12 is

rejected as obvious in view of Saito, Salvador, Breault when combined with Bonville (U.S. Patent No. 6,248,462). Claim 13 is rejected as obvious in view of Saito, Salvador and Kanbara, and claims 14 and 15 are rejected as obvious in view of Okamoto, Kanbara, Breault and Nelson (U.S. Patent No. 5,412,475).

In response, in order to advance prosecution, and without prejudice or disclaimer, Applicant hereby amends the independent claims as seen above, and respectfully submit that the claims are allowable for at least the following reasons.

Applicant relies on MPEP § 2143, which states that:

[t]o establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

It is respectfully submitted that at least the first and third criteria of MPEP § 2143 cannot be met with respect to the claims now pending in view of the cited references.

The Cited References Do Not Suggest All Claim Recitations

Even if the first requirement of MPEP § 2143 were to be considered satisfied in the Office Action (which it is not, as explained below), the cited references still do not meet the third requirement, which is that “the prior art reference (or references when combined) must teach or suggest all the claim limitations.”

Claim 1 recites a fuel cell device that includes a hot medium flow passage disposed around and conforming, in a contacting relationship, to a water contact section on an outside of a water storage unit. Claim 1 further recites that the fuel cell device has an antifreeze circulation flow passage that is adapted to allow the antifreeze solution to be circulated *from the fuel cell where the antifreeze solution cooled the fuel cell to the water storage unit*. An exemplary embodiment of such claimed features may be seen in Figs. 1 and 2.

None of the cited references disclose or suggest the above-highlighted recitations of claim 1. Assuming *arguendo* that “water jackets” are known in the art, as was alleged during the interview of September 19, 2007, neither Saito nor Salvador teach or suggest the claimed position of the fuel cell in relation to the water tank.

The Office Action recognizes that Saito teaches nothing in regard to the diversion of antifreeze, and thus introduces Salvador in combination with Saito. True, Salvador does teach diverting antifreeze from an engine to a water tank. Salvador further teaches that this antifreeze from the engine is also diverted to a fuel cell. However, Salvador also teaches that when the antifreeze is diverted to the fuel cell, it bypasses the tank 44. This is clearly seen by the position of valve 57 in Fig. 3, in view of the specification of Salvador at col. 4, lines 12-20.

Specifically, in Fig. 3, valve 57 is specifically depicted between tank 44, engine 10, and heat exchanger 30. Salvador states that heated engine coolant is routed “through a coolant conduit 56 provided through or adjacent to the freeze tank 44. The coolant conduit 56 branches off from the primary coolant circuit 29 where a coolant distribution valve 57 may be disposed between the fuel cell stack 24 and the heat exchanger 30. The coolant distribution valve 57 controls when coolant flows to the freeze tank 44.” (Salvador, col. 4, lines 12-19.) That is, Salvador never teaches sending antifreeze through a fuel cell and then sending the antifreeze that was sent through the fuel cell into a water storage unit. In Salvador, when antifreeze is diverted to the fuel cell, the antifreeze bypasses the tank 44. Accordingly, the recitations of claim 1 are not met by the Saito-Salvador combination for at least this reason.

* * * * *

Claim 17 is allowable for the pertinent reasons that make claim 1 allowable, and dependent claims 2-16 are allowable at least due to their ultimate dependency from claim 1.

* * * * *

In sum, even if the first requirement of MPEP § 2143 were to be considered satisfied, the third requirement of MPEP § 2143 cannot be satisfied with the cited references, because the cited references do not teach each and every element of the present invention. Thus, the present claims are allowable.

Lack of Suggestion or Motivation to Modify or Combine the References

There was no motivation to modify Saito to arrive at the present invention. To the extent that the ordinary artisan might have sought to modify Saito, the ordinary artisan would have directed his hot medium flow passage *through* the water tank, just as did Salvador. It is well known that increasing the surface area of a heated object (*i.e.*, the passage carrying heated antifreeze) improves heat transfer, and that the zig-zag system taught by Salvador is the traditional heat-transfer design for transferring thermal energy from a flow of fluid to a tank of fluid (where the two fluids are not to mix). In contrast, placing the hot medium flow passage around the water tank as claimed allows for thermal energy to escape from the side of the passage opposite the water tank. Only the innovator would have modified Saito-Salvador to arrive at the invention as claimed. Indeed, the artisan seeking to “more efficiently utilize the heated antifreeze” of Saito would not have designed a hot medium flow passage as claimed.

MPEP § 2144.05(III), entitled Rebuttal Of *Prima Facie* Case Of Obviousness, states that a “*prima facie* case of obviousness may also be rebutted by showing that the art, in any material respect, teaches away from the claimed invention.” (MPEP § 2144.05(III), second paragraph, emphasis added, citations omitted.) In view of the above (Chen teaching that water is to permeate from the outside environment to the inside of the enclosure 71), Applicants respectfully submit that to the extent that a case of obviousness has been established, that case is hereby rebutted.

Salvador teaches away from the present invention by stressing the classic zig-zag heat transfer devices. The ordinary artisan would have been discouraged from modifying Salvador to use the double-walled structure according to the claims because he/she would have believed in the superiority of the zig-zag system of Salvador.

Salvador also teaches away from the present invention by teaching that when the antifreeze is diverted to the fuel cell, it bypasses the tank 44.

* * * * *

MPEP § 2143.01, subsection 6 states that “the proposed modification cannot change the principle of operation of a reference – If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810 (CCPA 1959).” In *Ratti*, the CCPA held that the “suggested combination of references would require a substantial reconstruction and redesign of the elements shown in the primary reference.” This substantial redesign would have resulted in changing a rigid seal to a resilient seal. Thus, a reference cannot be modified to render an invention obvious if the modification changes a principle of operation of the reference.

With the above in mind, it is respectfully submitted that because the teachings of Salvador rely on bypassing tank 44 when antifreeze is diverted to the fuel cell, modifying Salvador to also send antifreeze to the tank would change the principle of operation of Salvador. Because modifying Salvador to arrive at the present invention changes the principle of operation of Salvador, just as changing the rigid seal to a resilient seal was found to change the principle of operation in *Ratti*, “the teachings of [Salvador] are not sufficient to render the claims *prima facie* obvious.” (MPEP § 2143.01, emphasis added.) The claims are not obvious.

New Claims

Applicant has added new claims 23 and 24. These claims include the recitations removed from claims 1 and 17, respectively, by this amendment. These claims are allowable for at least the reason that they depend from claims that are allowable, and for the additional reason that a first and second flow passage as claimed is not obvious in view of the cited references.

Conclusion

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

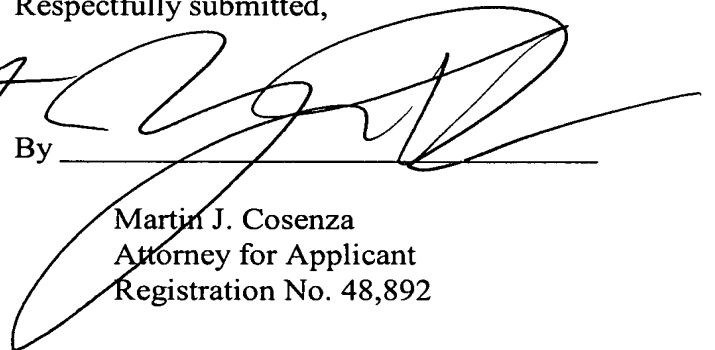
Examiner Chuo is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

Respectfully submitted,

Date

OCT 15, 2007

By

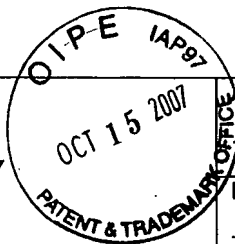


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APPENDIX A

Interview Summary



Application No.

10/501,097

Examiner

Tony Chuo

Applicant(s)

YAMADA, KAZUHIRO

Art Unit

1745

All participants (applicant, applicant's representative, PTO personnel):

(1) Tony Chuo.

(3) _____.

(2) Martin Cosenza.

(4) _____.

Date of Interview: 9/19/07.

Type: a) ☐ Telephonic b) ☐ Video Conference

c) ☒ Personal [copy given to: 1) ☐ applicant 2) ☒ applicant's representative]

Exhibit shown or demonstration conducted: d) ☐ Yes e) ☒ No.

If Yes, brief description: _____.

Claim(s) discussed: 1 and 14.

Identification of prior art discussed: Salvador et al (US 6432568).

Agreement with respect to the claims f) ☐ was reached. g) ☒ was not reached. h) ☐ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: The proposed amendment by adding the word "contacting" does not appear to overcome the Salvador reference (examiner's position). Adding a double walled structure/water jacket to claim 1 does overcome the previous 103 rejection, but the examiner's position is that it would still be obvious in view of other prior art references. In addition, the position of the fuel cell in the Salvador reference was discussed.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN A NON-EXTENDABLE PERIOD OF THE LONGER OF ONE MONTH OR THIRTY DAYS FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.

Tony Chuo
Examiner's signature, if required